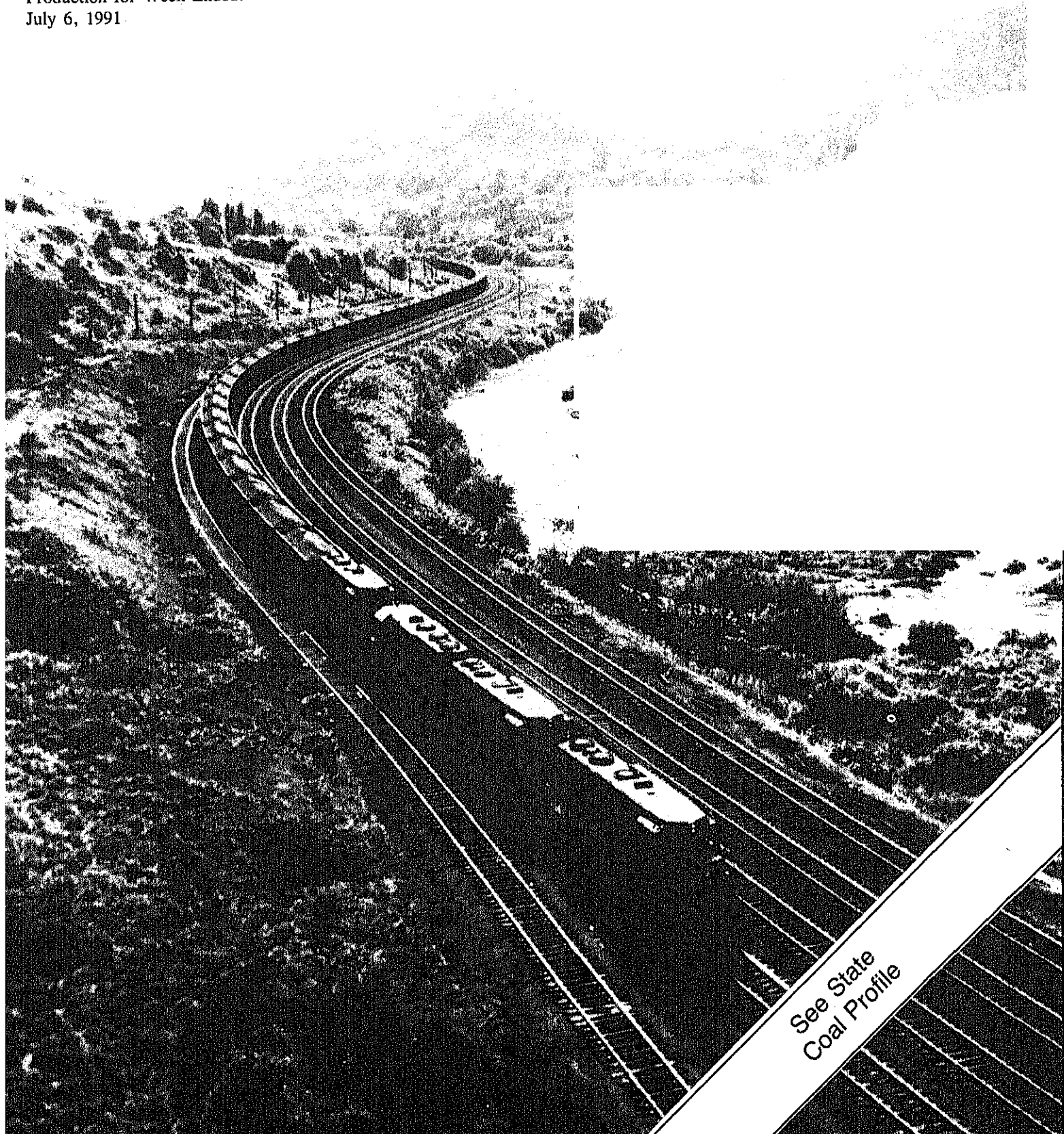




# Weekly Coal Production

Production for Week Ended:  
July 6, 1991



## Preface

The *Weekly Coal Production (WCP)* provides weekly estimates of U.S. coal production by State. Supplementary data are usually published monthly in two supplements: the Coal Exports and Imports Supplement and the Domestic Market Supplement. The Coal Exports and Imports Supplement contains detailed monthly data on U.S. coal and coke exports and imports. The Domestic Market Supplement contains detailed monthly electric utility coal statistics, by Census Division and State, for generation, consumption, stocks, receipts, sulfur content, prices, and the origin and destination of coal shipments. This supplement also contains summary-level, monthly data for all coal-consuming sectors on a quarterly basis.

Preliminary coal production data are published quarterly, based on production data collected using Form EIA-6, "Coal Distribution Report." Based on 1988 and 1989 data, the coal production estimation error for a quarter at the national level (i.e., the difference between the sum of the weekly estimates for a quarter and the quarterly EIA-6 preliminary data) ranges from 1 percent to 4 percent for 1988 and 1 percent to 2 percent for 1989.

Final coal production data are published annually, based on the EIA-7A coal production survey. Based

on 1988 and 1989 data, the revision error for a quarter at the national level (i.e., the difference between the EIA-6 preliminary data and the EIA-7A final data) ranges from 0.02 percent to 0.08 percent for 1988 and 0.09 percent to 0.14 percent for 1989.

This publication is prepared by the Coal Division; Office of Coal, Nuclear, Electric and Alternate Fuels; Energy Information Administration (EIA) to fulfill its data collection and dissemination responsibilities as specified in the Federal Energy Administration Act of 1974 (P.L. 93-275) as amended. *Weekly Coal Production* is intended for use by industry, press, State and local governments, and consumers. Other publications that may be of interest are the quarterly *Coal Distribution*, the *Quarterly Coal Report*, *Coal Production 1989*, and *Coal Data: A Reference*.

This publication was prepared by Wayne M. Watson and Michelle D. Bowles under the direction of Mary K. Paull and Noel C. Balthasar, Chief, Data Systems Branch. Specific information about the *State Coal Profile: Tennessee* may be obtained from Chris V. Buckner at 202/254-5368. Questions on energy statistics should be directed to the National Energy Information Center (NEIC) at 202/586-8800.

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State Coal Profile

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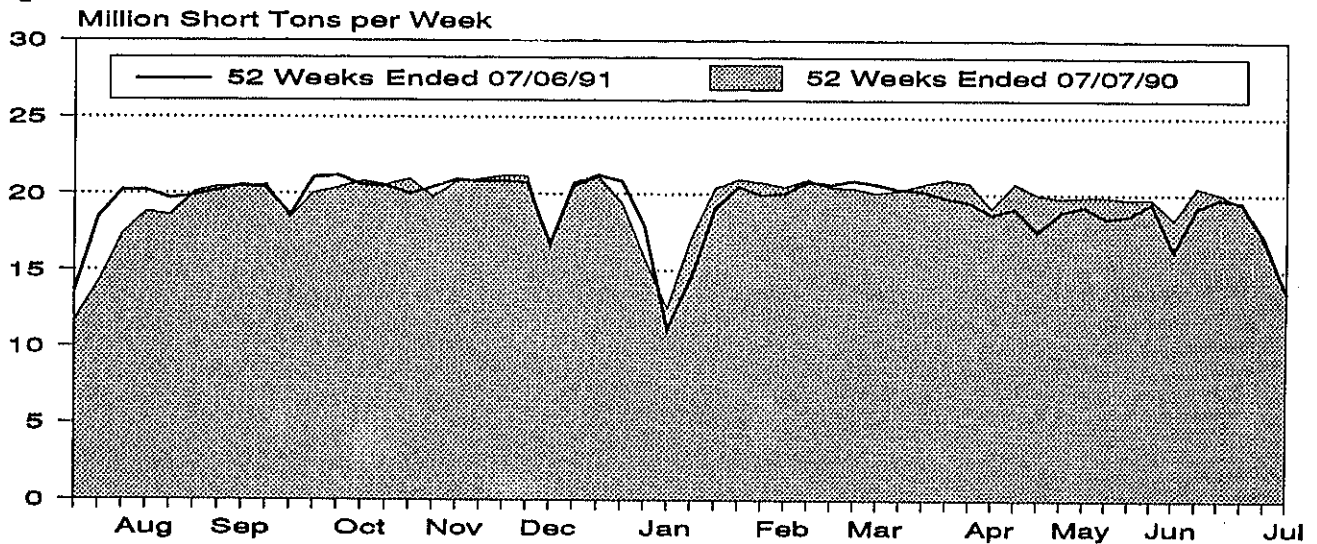
Released for printing July 12, 1991

## Summary

U.S. coal production in the week ended July 6, 1991, as estimated by the Energy Information Administration, totaled 14 million short tons. This was 20 percent less than in the previous week, reflecting the

Independence Day holiday. Production east of the Mississippi River totaled 6 million short tons, and production west of the Mississippi River totaled 7 million short tons.

**Figure 1. Coal Production**



**Table 1. Coal Production**

	<u>Week Ended</u>			<u>52 Weeks Ended</u>		
Production and Carloadings	07/06/91	06/29/91	07/07/90	07/06/91	07/07/90	Percent Change
<b>Production (Thousand Short Tons)</b>						
Bituminous Coal <sup>1</sup> and Lignite . . .	13,574	17,004	13,638	1,003,736	1,010,625	-0.7
Pennsylvania Anthracite . . . . .	25	46	32	2,882	3,137	-8.1
U.S. Total . . . . .	13,599	17,050	13,670	1,006,618	1,013,762	-7
Railroad Cars Loaded . . . . .	87,931	111,846	88,949	6,524,958	6,558,269	

<sup>1</sup>Includes subbituminous coal.

Notes: All data are preliminary. Totals may not equal sum of components because of independent rounding.

Sources: Association of American Railroads, Transportation Division, Weekly Statement CS-54A; Energy Information Administration, Form EIA-6, "Coal Distribution Report"; Form EIA-7A, "Coal Production Report"; and State mining agency coal production reports.

**Table 2. Coal Production by State**  
(Thousand Short Tons)

Region and State	Week Ended		
	07/06/91	06/29/91	07/07/90
<b>Bituminous Coal<sup>1</sup> and Lignite</b>			
<b>East of the Mississippi</b> .....	<b>6,358</b>	<b>9,592</b>	<b>6,980</b>
Alabama .....	250	440	310
Illinois .....	891	1,086	610
Indiana .....	540	674	520
Kentucky .....	1,605	2,420	2,156
Kentucky, Eastern .....	1,196	1,806	1,476
Kentucky, Western .....	409	614	680
Maryland .....	34	49	42
Ohio .....	324	530	373
Pennsylvania Bituminous .....	659	1,123	599
Tennessee .....	54	95	61
Virginia .....	429	743	477
West Virginia .....	1,573	2,432	1,831
<b>West of the Mississippi</b> .....	<b>7,216</b>	<b>7,412</b>	<b>6,658</b>
Alaska .....	17	21	17
Arizona .....	144	180	154
Arkansas .....	1	1	*
Colorado .....	223	317	153
Iowa .....	5	6	5
Kansas .....	11	14	9
Louisiana .....	53	67	59
Missouri .....	33	41	36
Montana .....	781	710	649
New Mexico .....	459	537	483
North Dakota .....	600	545	537
Oklahoma .....	32	33	29
Texas .....	762	955	794
Utah .....	269	370	202
Washington .....	64	81	67
Wyoming .....	3,763	3,532	3,463
<b>Bituminous Coal<sup>1</sup> and Lignite Total</b> ..	<b>13,574</b>	<b>17,004</b>	<b>13,638</b>
<b>Pennsylvania Anthracite</b> .....	<b>25</b>	<b>46</b>	<b>32</b>
<b>U.S. Total</b> .....	<b>13,599</b>	<b>17,050</b>	<b>13,670</b>

<sup>1</sup>Includes subbituminous coal.

\*Less than 0.5 thousand short tons.

Notes: All data are preliminary. Totals may not equal sum of components because of independent rounding.

Sources: Association of American Railroads, Transportation Division, Weekly Statement CS-54A; Energy Information Administration, Form EIA-6, "Coal Distribution Report"; Form EIA-7A, "Coal Production Report"; and State mining agency coal production reports.

# State Coal Profile: Tennessee

## Total Area of State:

42,244 square miles

## Area Underlain by Coal:

4,600 square miles

## Demonstrated Reserve Base of Coal: (January 1, 1990)

856 million short tons  
(<1 percent of U.S. total)

## First Year of Documented Coal Production:

1814 (100 short tons)

## Peak Year of Coal Production:

1972 (11 million short tons)

## 1989 Coal Production:

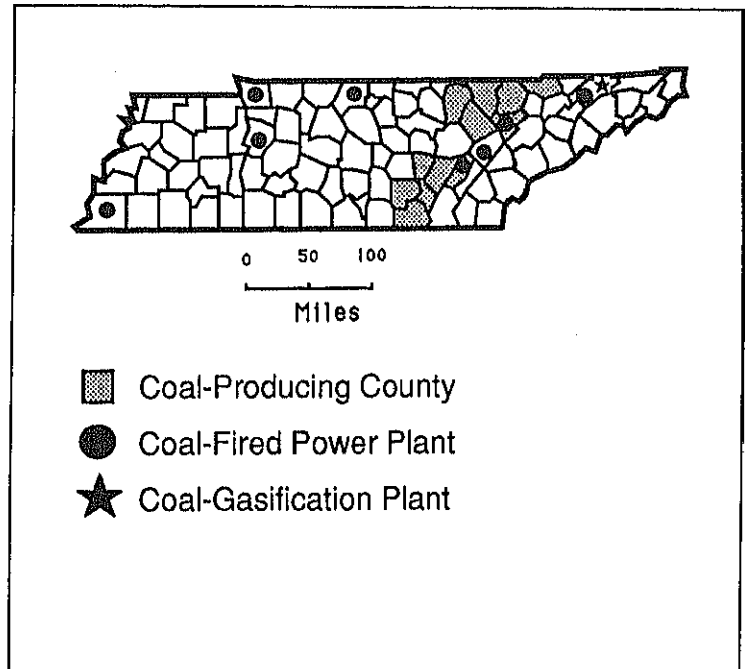
6 million short tons  
(<1 percent of U.S. total)

## 1989 f.o.b. Mine Price:

\$26.98 per short ton  
(U.S. average = \$21.82)

## 1989 Coal Consumption:

25 million short tons  
(3 percent of U.S. total)



	<u>Number</u>	<u>Percentage of U.S. Total</u>
<b>Number of Mines (1989)</b> .....	98	3
Underground .....	68	4
Surface .....	30	2
<b>Number of Miners (1989)</b> <b>(at mines producing more than 10,000 short tons)</b> .....	1,857	1
Underground .....	1,471	2
Surface .....	386	<1
<b>Average Quality of Utility Coal Receipts (1989)</b>	<u>Tennessee</u>	<u>U.S. Average</u>
<b>Heat Content</b> (million Btu per short ton) .....	23.8	20.9
<b>Sulfur Content</b> (percent by weight) .....	2.0	1.3
<b>Ash Content</b> (percent by weight) .....	9.6	9.9

The Tennessee coalfields are a part of the Appalachian coal-producing region, which extends from northern Pennsylvania to Alabama. The coal deposits, all bituminous in rank, occur in an area of nearly 5,000 square miles in the eastern part of the State. Even though coal mining is a relatively small industry in Tennessee, the value of coal production in 1989 was nearly \$200 million. Production accounted for one-fifth of the total value of all minerals produced in the State, including oil and gas.

Of the more than 850 million short tons of coal that make up Tennessee's demonstrated reserve base, nearly 60 percent is considered recoverable. As mined, the coal has a heat content ranging from 26 to 28 million Btu per short ton, a sulfur content ranging from less than 1 percent to 4 percent by weight, and an ash content ranging from 6 percent to 12 percent by weight. Among the 20 coalbeds currently mined, in the State, the Jellico bed is the major source of production, accounting for 30 percent of the State's coal output. The bed averages 2 to 5 feet in thickness, and extends into several counties.

The first recorded production of coal in the State was in 1814, when coal was mined by a blacksmith for forging iron near what is now Rockwood, in Roane County. By 1835, the coal industry grew to a commercial scale, as Tennessee coal was shipped by water as far as New Orleans. During the 1850's, the construction of railroads spurred coal production. Production rose to over 1 million short tons in the late 1880's. In the first half of the twentieth century, Tennessee's coal production fluctuated between 3 and 8 million short tons.

Following World War II, the coal industry lost two of its major markets, space heating and locomotive fuel. Space heating declined because oil and gas equipment was being used in the residential sectors, and locomotive fuel lost its market as diesel electric units came on line. However, the demand for coal by electric utilities increased as the Tennessee Valley Authority (TVA), a Federal electric power system, started to build a series of coal-fired power plants. As a result, coal production reached a record high of 11 million short tons in 1972. Since that time, however, coal production has been on a downward trend, declining to 6 million short tons in 1989. This ranked the State 17th among the 27 coal-producing States. The decline in coal production is attributed to the higher cost of surface mining with thicker overburden and thinner discontinuous coal seams.

Nearly 100 coal mines were operating in the State's 12 coal-producing counties in 1989. Anderson, Campbell, and Claiborne Counties accounted for 70 percent of the coal output. Prior to 1938, all coal produced in the State was from underground mines.

Today, surface mines account for more than 30 percent of the State's total production. Tennessee's coal miner productivity in 1989 averaged 2.2 short tons per hour at surface mines and 1.5 short tons per hour at underground mines, both slightly below the average for the Appalachian Region.

Of the 6 million short tons of coal produced in Tennessee in 1989, 2 million short tons were used by the State's coal-fired power plants, and less than 400 thousand short tons were used by other coal consuming sectors in the State. A large portion of the 4 million short tons of coal shipped out of Tennessee went to Georgia, with the remainder delivered to other nearby States. Coal exports were less than 200 thousand short tons.

In 1989, Tennessee consumed 25 million short tons of coal, nearly four times the amount it produced. Kentucky supplied by far the greatest amount, 14 million short tons, while Illinois and Virginia together supplied nearly 3 million short tons. Electric power plants in the State accounted for 80 percent of the total coal consumption. Small amounts of coking coal were consumed at the Occidental Chemical Corporation, located in Columbia, Tennessee. The plant, one of four major producers of elemental phosphorus in the United States, converts coal to coke for use in smelting phosphate rock.

Tennessee's other industrial, residential, and commercial sectors consumed a total of 4 million short tons of coal. The leading consumer, accounting for more than two-fifths of the coal consumed by these sectors, was the Tennessee Eastman Company, a unit of the Eastman Chemicals Division of the Eastman Kodak Company, located in Kingsport. The company's coal gasification plant, which began operating in 1983, is the State's largest industrial consumer, and one of four coal-gasification plants in the Nation. The coal gasification plant uses coal as a feedstock to manufacture acetic anhydride, used in the production of cellulose acetate for photographic film base.

In 1989, TVA owned and operated all of the State's seven coal-fired power plants. The power plants had a net summer capability of 9,289 megawatts, and accounted for 55 percent of the State's total generating capability. These coal-fired units generated over 46 billion kilowatthours of electricity, more than three-fifths of the State's total electricity generation. The Cumberland plant, located in Stewart County, is the largest coal-fired power plant in the State and among the largest in the Nation. The plant has two coal-fired generating units, with a total capability of 2,538 megawatts.

Looking ahead, Tennessee Eastman Company is undergoing a \$200 million expansion of its facilities

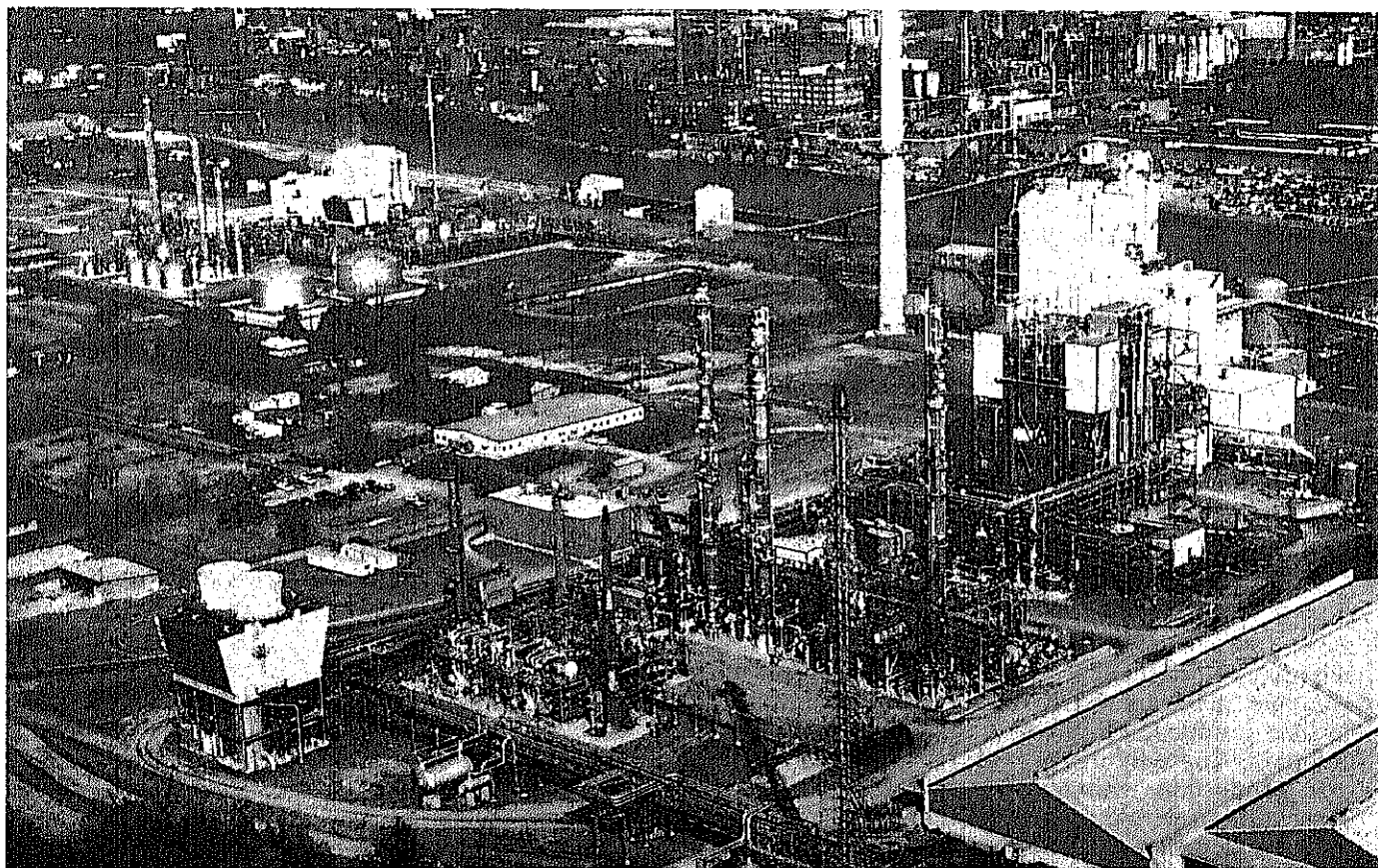
at its Kingsport plant, and will increase its daily consumption of coal from 900 short tons to 1,100 short tons. The expansion is scheduled to be completed by January 1, 1992.

The U.S. Department of Energy is funding a magnetohydrodynamics (MHD) research facility in Tullahoma, Tennessee, at the University of Tennessee Space Institute, through the Clean Coal Technology Program, a joint government/industry venture. In a MHD plant, coal is burned at high temperatures, and the combustion gas is used as a conductor in a magnetic field to produce electricity. Existing coal-fired power plants have efficiencies of 32 to 35 percent, but a MHD plant would have an efficiency of 50 to 60 percent. These types of plants would therefore use far less coal and emit less pollutants in producing a given amount of electricity.

Annual coal production in Tennessee in 1992 is expected to remain at 6 million short tons. TVA will continue to be the State's leading consumer of coal, while Tennessee Eastman Company is expected to continue to be the State's predominant industrial consumer.

## References:

Energy Information Administration: *Coal Production* (various issues); *Quarterly Coal Report* (various issues); *Coal Distribution January-December 1990* (April 1991); *Cost and Quality of Fuels for Electric Utility Plants 1989* (July 1990); *Inventory of Power Plants in the United States 1989* (September 1990); *Electric Power Annual* (various issues). Bureau of Mines, U.S. Department of the Interior, *State Mineral Summaries 1991*; *Keystone Coal Industry Manual 1989* (Maclean Hunter Publishing Company); Eastman Chemical Company, *Eastman: Chemicals, Fibers Plastics*, Eastman Kodak Company, (September 1990); Tennessee Valley Authority, *A History of the Tennessee Valley Authority*, (1983); Occidental Chemical Corporation; Division of Geology, Tennessee Department of Conservation and Commerce, *The Coal Industry of Tennessee, 1960*; "Kodak sets \$150 million for full use of coal gasification," *Clean Coal/Synfuels Letter* (November 1990), p. 1; "First phase of Tennessee MHD testing shows progress with high sulfur coal," *Clean Coal/Synfuels Letter* (December 1990), p. 2; "Profile of Tennessee Valley Authority Coal-Fired Plants Affected by Phase I of 1990 Congressional Clean Air Act," *King's Western Coal* (March 1991), Issue no. 804.



*Tennessee Eastman Company's Coal Gasification/Acetic Anhydride Plant, located in Kingsport, Tennessee, is the first commercial operation of its type in the United States. The plant uses coal as raw material to produce acetic anhydride, a chemical used in manufacturing photographic film base.*



## Methodology

### Weekly Data

Weekly coal production estimates are based on weekly carload data collected by the Association of American Railroads (AAR) from its member railroads and other cooperating railroads. EIA calculates the average tonnage per carload for each railroad's coal car fleet from information obtained from the most recent Quarterly Freight Commodity Statistics filed by Class I Railroads with the Interstate Commerce Commission (ICC) and from data made available by individual railroads. These average tonnages per carload are then multiplied by the number of cars loaded to obtain an estimate of weekly coal production shipped by AAR railroads.

Next, the weekly coal production estimate for a specific week is obtained by dividing the AAR rail tonnage for the week by a factor representing the proportion of quarterly AAR rail shipments to total quarterly coal production for the same quarter of the previous year in order to reflect seasonal variation. The ratio of rail tonnage to total production is occasionally adjusted to take into consideration current rail or coal strikes.

Once the U.S. weekly coal production estimate is determined, it is split into two subtotals - a portion for States with little or no rail coal shipments, and a portion for the remaining States, in which a significant percentage of production is shipped by rail. The States with little or no railroad coal shipments are Alaska, Arizona, Arkansas, California, Georgia, Iowa, Kansas, Louisiana, Missouri, Texas, and Washington. With the exception of California and Louisiana, the weekly production estimate for each "nonrail State" is estimated by multiplying the U.S. weekly coal production estimate by the ratio of projected production for that State to total U.S. projected production, for the current quarter. The methodology used to project State coal production is given in the EIA publication *Model Documentation of the Short-Term Coal Analysis System* (DOE/EIA-0394). The EIA contacts the producers in California and Louisiana to obtain their production estimates.

Production estimates for the "rail States" are based on the weekly railroad tonnage data for railroads shipping coal from those States, data supplied by these railroads on the percentages of their coal shipments originating from these States, and estimates made by the EIA concerning the amount of State production tonnage that is shipped on these railroads. These figures are used to compute weekly coal production estimates for these "rail States." These independent estimates are then proportionately adjusted to insure that the total production estimate for these "rail States" equals the U.S. total weekly coal production estimate minus the production estimated for all of the "nonrail States." Separate

production estimates are made for the anthracite and bituminous coal regions in Pennsylvania, eastern and western Kentucky, and northern and southern West Virginia.

### Monthly Data

Preliminary estimates of monthly coal production by State are obtained by summing weekly coal production estimates published in the *Weekly Coal Production* report. If a week extends into a new month, the production is allocated by day, and the days are added to the month in which they occur. For weeks without holidays, the allocation is Monday through Friday, 18.4 percent each day; Saturday, 8 percent; and Sunday, 0 percent. For weeks with a holiday occurring on a day other than Sunday, the allocation is Sunday and the holiday, 0 percent; and any other day, 20 percent.

Preliminary weekly and monthly production estimates are revised quarterly when quarterly production data, become available. Preliminary weekly and monthly estimates are proportionately adjusted to conform to the quarterly production figure.

### Quarterly Data

Estimates of quarterly coal production are based on data collected quarterly on Form EIA-6, with certain adjustments. The national estimate of quarterly coal production is set equal to the quarterly U.S. coal production total as reported on the Form EIA-6. Based on 1988 and 1989 data, the coal production estimation error for a quarter at the national level (i.e., the difference between the sum of the weekly estimates for a quarter and the quarterly EIA-6 preliminary data) ranges from 1 percent to 4 percent for 1988 and 1 percent to 2 percent for 1989.

The quarterly production data, although published throughout the year, are considered preliminary until EIA annual production data are finalized in September of the following year. At that time quarterly production data are revised (proportionately adjusted) to conform to the final annual production figures.

### Finalizing Annual Production

Preliminary total annual U.S. coal production, as reported in the *Weekly Coal Production* report in the first week in January of the following year, is the sum of revised monthly/quarterly estimates of production for the first 9 months (first three quarters) and a preliminary estimate of fourth quarter production derived from weekly estimates.

Production data for the fourth quarter of the  
year available from Form EIA-6 in March of  
the following year, the preliminary fourth-quarter  
production figure and corresponding State  
figures may or may not be revised, depending  
on the size of the difference between the estimates  
and the fourth-quarter data. As a general practice, EIA  
does not revise the initial annual production  
figures (determined initially in January of the  
year). Weekly, monthly, and quarterly  
national production data are adjusted to

conform to finalized annual production figures  
derived from Form EIA-7A, in September of the  
following year.

Based on 1988 and 1989 data, the revision error for  
a quarter at the national level (i.e., the difference  
between the EIA-6 preliminary data and the EIA-  
7A final data) ranges from 0.02 percent to 0.08  
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